Qualityinfo

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# Retranslating Lean From Its Origin
# Back to the basics of the Toyota Production System

The world first became aware of the Toyota Production System (TPS) when Taiichi Ohno published a book about his groundbreaking efforts at Toyota. It was published in Japan in 1978. The Japanese version of his book wasn't translated into English until 1988. Because 10 years had passed, this translation did not fully communicate the nuances of Ohno's vision. The direct translation into English does not communicate the depth hidden within Ohno's choice of words.

Ohno was very specific in his use of language. He did this to express to his trainees the intent, sequence, and purpose of each TPS principle and method. Some important concepts, such as the spirit of kaizen, were not even mentioned in his original book. We are writing this to communicate what has been lost in translation based on a number of unpublished lessons from Taiichi Ohno and what I have learned from those who have continued to evolve TPS beyond Toyota after 1979. (More on the TPS beyond Toyota.)

For example, kaizen was loosely translated as "continuous improvement" since there was no explanation in Ohno's original text. It has never been accurately addressed, and for this reason many organizations are struggling to initiate and sustain a lean culture because they could not develop leadership based on the kaizen mindset. When we look at the original Japanese characters alone, kaizen has a deeper meaning, as was intended by Ohno. In fact, Ohno often used the Japanese word *kairyo* to describe continuous improvement that mainly focuses on physical improvements to processes, technology, and machines through monetary investment.

However, kaizen is not about making physical improvements. It's about changing one's behaviors in order to benefit others. It is a state of mind. In 1990, the year he passed away, Ohno defined kaizen as the "spirit of Toyota."

We can see, even from this one example, that looking deeper into the original meaning of each Japanese word that Ohno intentionally used to create awareness will guide us out of confusion, arguments, and everything else that is holding us back from achieving the results that Ohno proved were possible.


**The roots of *jidōka***

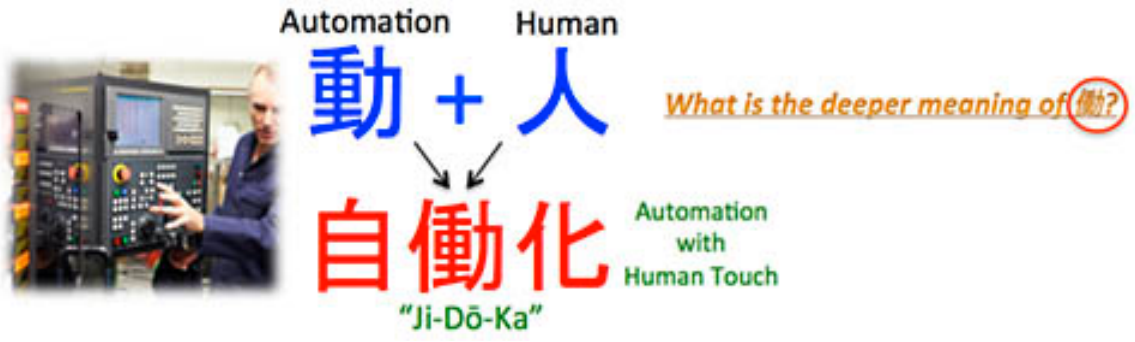
The concept of *jidōka* as it is generally understood was extremely important for Toyota early in its history, when it made automated looms. Today, the *jidōka* concept is most apparent in how Toyota has applied it to its final assembly line, where anyone can stop the entire production line upon discovering a defect.

But how good is the production line if it continues to create defects? The ideal state is for the line to never have to stop. The real question is how can we eliminate the root cause of why people or machines produce such defects in first place? How can we ensure the production line never has to stop? At a Toyota investors meeting in 2015, President Akio Toyoda said, "If workers know they have the ability to stop the line, they will do everything they can to avoid having to stop the line." Instead of simply responding to defects, *jidōka* also teaches us not to create those defects in the first place.

The deeper meaning of *jidoka* is improving production process and machines so they can always do work that adds value instead of just spinning their gears. Ohno's choice of spelling for *jidōka*(see the image below) emphasizes that if we remove nonvalue-added work and improve value-added work, the defects will ultimately be eliminated.

It is now common knowledge that TPS has two pillars: just-in-time and *jidōka.* Many lean guides talk about the Japanese Kanji (characters borrowed from the Chinese alphabet) that are used to write *jidoka* (**自働化**) They explain how the symbol *dō* (**働**) means "humans assisting machines when defects are found." *Ji-dō-ka* is therefore translated as

"automation with a human touch." If we look deeper into this symbol, we will see many more important lessons beyond just automation.

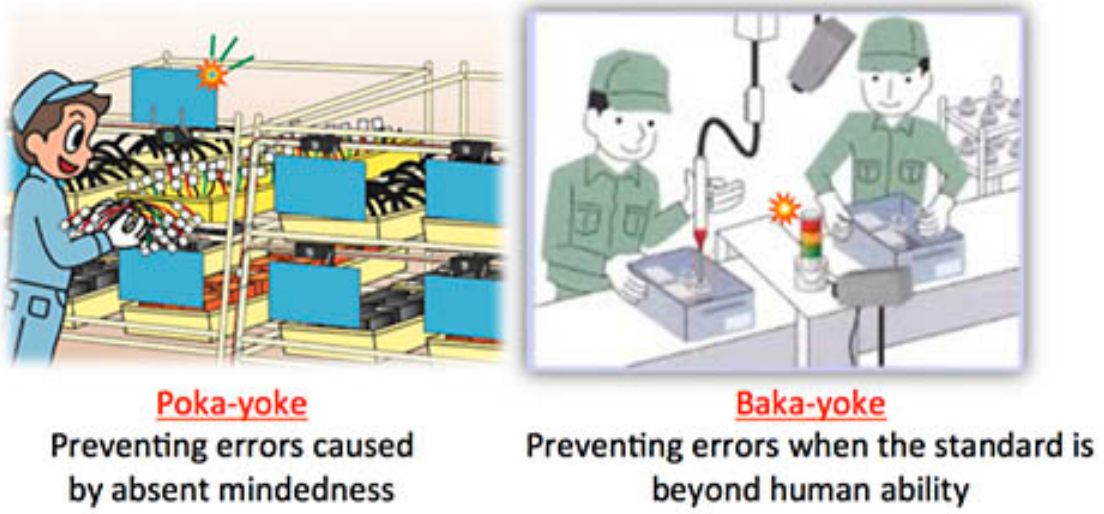



*Ji-dō-ka* surely is a high-level methodology applied to automated machines that are mostly independent from manual work. Ohno taught us that improvement to machines must be kept as the last stage, and we first need to focus on improving our mindsets, value streams, and processes that we have much more control over. Therefore, we must look deeper into the original meaning of the word *dō* (**働**) because it provides context not only for machines, but also for people's daily work.


Ohno's well-known practice was always to go to the *gemba* (the actual place of work) and observe people working. He taught people to call all motion that adds value to products "truly working." Motion that is not adding value is simply called "moving around." By clearly separating the use of these symbols, he taught trainees how to tell the difference between nonvalue-added work and value-added work by creating awareness of that difference with his creative use of spelling. In this way, he shows us that the most effective approach is to eliminate unnecessary "moving around" (**動**) and create "true work" (**働**) with the full participation of the shop floor as the first step. He used creative spelling to teach this basic principle to as many people as possible and get them engaged in the process of making small changes through which the right kaizen mindset will evolve.

## Misunderstood lean: *baka-yoke* vs. *poka-yoke*

One of the biggest misunderstandings about lean is that Ohno also clearly identified the difference between *baka-yoke* and *poka-yoke*. A popular story in the lean community is that interpreters for Ohno felt it was offensive to say *baka* and did not understand the intent behind this principle. Direct translation of *baka* is "fool" or "idiot." If we get stuck on this negative definition, the purpose of *baka-yoke* as Ohno designed it will never be communicated simply because of politeness and political correctness. Let me differentiate the two words.




There are two types of people on the shop floor. One type simply forgets by not paying full attention and makes avoidable errors. These people are called *poka.* The other type of person does not have the ability to prevent errors from happening. These people make every effort to prevent errors but still make unavoidable errors based on their ability or technical limitations as humans. This type of performance is put into the *baka* category in the sense that the standard is beyond people's human ability, as opposed to *poka* people who have the ability but are actively disengaged.

Ohno clearly taught that *poka* people are the worst type of workers that a company can have: People who are actively disengaged in their own tasks. This should encourage leaders to prepare a specific type of training for *poka* people to make sure that they will pay full attention to the work at hand. Meanwhile, *poka-yoke* ensures that errors will not occur while people are disengaged.

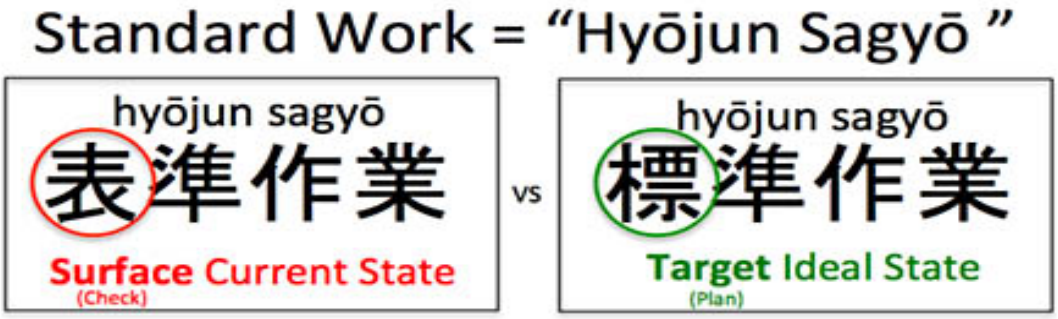
In contrast, *baka* people are those who need support from leadership so that they will continue to learn and grow without blaming themselves for honest errors they made in the past. They will need support in the form of *baka-yoke*, such as simple jigs, sensors, and mechanical improvements, so that they can continue to perform quality work. As well, machines will not intentionally choose to make errors due to a lack of attention like humans do. Therefore, error-proofing

devices for machines are typically called *baka-yoke* instead of *poka-yoke.* It is so important for us to understand what the problem is and implement appropriate types of error-proofing mechanisms.

## Where should we start: PDCA or CAPD?

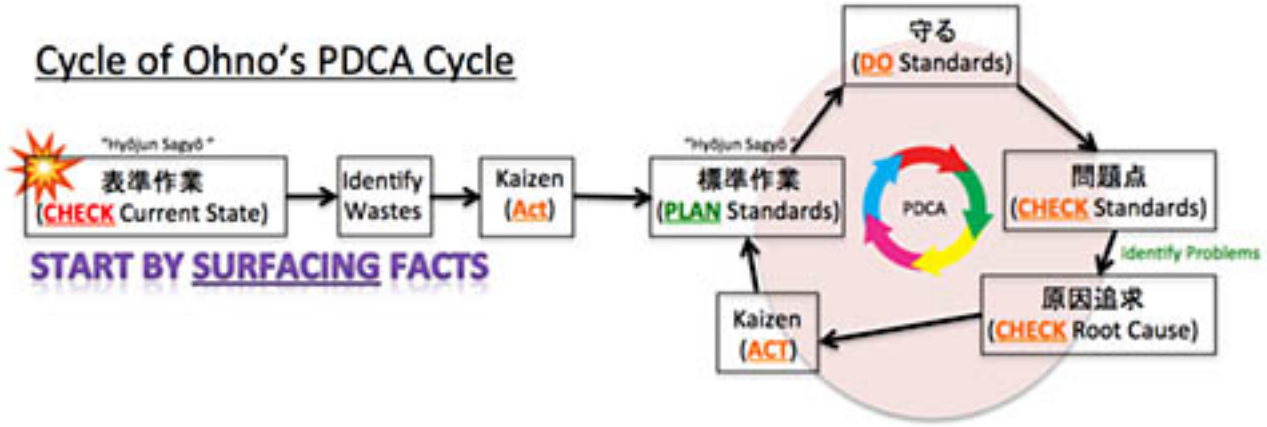
**Lean arguments clarified by Ohno's use of Japanese spelling**
With all the different approaches to lean, many people and organizations are left wondering where they should even begin. Take the plan, do, check, act (PDCA) cycle, for example. The PDCA cycle is one of the most widely known and utilized approaches to process improvement. At first glance, this makes the starting place for improvement seem obvious. If PDCA starts with plan, then you would assume that planning is the starting point of the cycle, but it is not that simple. Ohno took the acronym PDCA from W. Edwards Deming's improvement cycle, but he decided that the PDCA cycle should start with checking. This is apparent in his process of developing standard work. Let's look at how Ohno taught the process of developing "standard work" in Japanese.

"Standard work" can be written in two different ways in Japanese. Each spelling refers to a different process within the PDCA cycle. Both types of standard work are pronounced the same way: *hyōjun sagyō.* But the sound *hyō* can be written either with a symbol that means "surface" or a symbol that means "target." The target standard work is the only version that is typically translated into English and refers to the importance of formulating best practices and procedures. This is the definition that is well known in the lean community. But how do we reach this target?



Ohno's creative use of language shows that we must first focus on the other translation of standard work, which is to "surface" facts from the *gemba* without judgment or biases to get a clear picture of reality. This signifies that the C in PDCA (check) is the starting point. Of course, it is a cycle after all, so there will be no beginning and end once it really gets rolling continuously. However, if planning is done before the preliminary checking stage, improvements will be short-sighted, and the PDCA cycle will generate limited results.

How much time and resources do you spend on clearly understanding the current state before jumping into a PDCA cycle? Many organizations I have dealt with haven't done this enough and struggle to get results even though they are going through the PDCA cycle. Ohno has always provided us with an answer to overcome this challenge by using this particular spelling (i.e., "surface") in his training and his writing. He asserted that clearly understanding the current state and developing consensus is the most important step in organizational transformation.

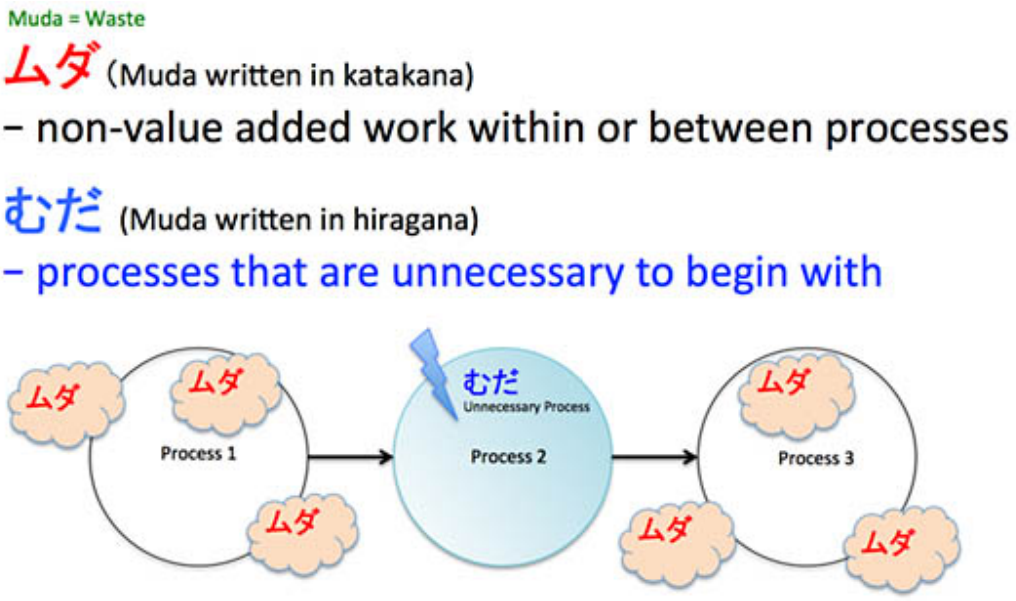



## The lost basics of *muda*

Everyone knows that lean is about identifying and eliminating waste. But what is waste? A lot of effort goes into defining it, and there are a number of different ways to categorize it—7 Wastes; material, method, man, management, machine, quality, safety (5MQS); *muda, mura, muri*(3MUs)—and variations of them. In the effort to decide which waste to focus on, many people overlook the context of the word "waste" itself. The Japanese word *muda* simply means "waste." But waste can vary greatly in type and scope.

Once again, Ohno communicated this variation by changing the spelling but not the pronunciation. Unlike the previous example of *jidōka,* in which the difference is communicated by swapping Kanji (symbols that have both a meaning and pronunciation), *muda* is spelled using one of two phonetic alphabets (Japanese has three alphabets). If *muda* is spelled in the *katakana*alphabet (**ムダ**), it refers to waste within or around a process. If it is spelled with the *hiragana*alphabet (**むだ**), then it means a whole process that is wasteful to begin with, either

because it is unnecessary or has become unnecessary through improvements to the value stream. It is very helpful to be able to communicate the scope of waste this way so that we don't spend time and effort improving processes that should not exist at all. With this in mind, we need to focus on eliminating waste that exists in necessary processes that we can see with our own eyes.




**The true intent of 'eliminating' waste**

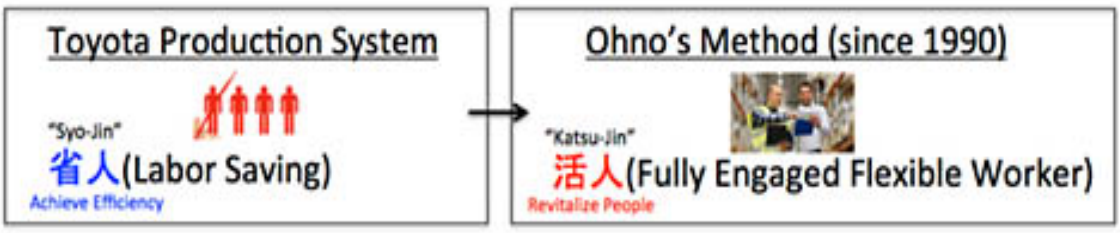
There are several Japanese words that translate to mean "eliminate" or "remove." Ohno chose one specific word to describe what it really takes to eliminate waste. That word is *haijo*. This is a very strong word. It means not only "to remove" but also "to cast out and disown" the root cause. It's not just about getting rid of waste on the surface. It is about asking hard questions to identify the root cause of waste and abolishing it so it never comes back.

This is the difference between short-sighted improvement activity and the real TPS approach. It is not enough to solve problems here and there. You must be dedicated to abolishing all waste from your workplace and your life. Here Ohno does it again by meticulously pinpointing specific spelling to communicate the secret to success. We must all go back to the basics and re-examine his exact phrasing in his original text to find the missing answers.

## Labor-saving vs. flexible workers

**Where are the results? Where is the resistance coming from?** Many organizations complain that they "implemented lean" and have not experienced the "savings" and "efficiency" they expected. But the language they use to describe lean tends to show that they had the wrong expectations and goals in the first place. Instead of "savings" and "efficiency," they need to be focusing on "flexibility" and "vitality." Using the word "lean" to describe the techniques developed at Toyota only came into practice when people tried to spread these techniques internationally. This is where the fixation on "saving" typically comes from. Using terms such as "labor-saving" has a big and often negative effect on how people react to lean. People take "labor-saving" to mean job-cutting. Instead of looking forward to self-development through work, people fear they will be criticized.

The term that Ohno developed with Hitoshi Yamada upon leaving Toyota is a much better way to describe a lean workforce. Instead of the traditional TPS, where *takt* time is often fixed, and the focus is on reducing the required manpower to improve efficiency, Ohno's focus shifted to providing the workforce with flexibility and ownership to better match cycle time to customer demands, particularly in high-mix/low-volume production lines. The word Ohno and Yamada used is *katsu-jin,* which translates to "flexible people." The word *katsu* doesn't mean "savings"; it means "vitality." Here, the point is clear that people are not a liability; they are assets that must be developed to their full potential. The word *katsu* promises the ultimate goal of lean transformation and emphasizes the importance of respect for people in the right context. (More on respect for people.)




## Importance of rediscovering lean from the source

These are just a few examples of Ohno's ideas that have not received enough attention. Revisiting Ohno's original text and learning from his evolution of TPS beyond Toyota will deliver Ohno's wisdom to your organization.

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